

REMARKS

The Applicants appreciate the reopening of prosecution after the final rejections contained in the previous Office Communication.

Claims 11-26 are pending in this application. Claims 22-24 are newly rejected under 35 USC 112, second paragraph. Previously presented prior art rejections are maintained. In particular, claims 22-24 stand rejected under 35 USC 102(b) as being anticipated by Kear; claims 11-15, 17-21 and 25 stand rejected under 35 USC 103(a) as being unpatentable over Kurz in view of Kear; and claims 16 and 26 stand rejected under 35 USC 103(a) as being unpatentable over Kurz in view of Kear and further in view of Caballero.

Rejections under 35 USC 112:

Claim 22 has been amended herein to clarify that the intermediate layer is applied to the substrate and that there is a "third layer" formed on the intermediate layer. The amendments overcome the indefiniteness rejection by particularly pointing out the claimed structure.

Rejection of claims 22-24 under 35 USC 102:

In the Response to Argument section of the Office Communication, the Examiner finds the Applicant's previous argument (that the three-layer structure of claim 22 is not anticipated by Kear) to be non-persuasive because claim 22 does not differentiate between the two single crystal layers. This is the same concern that leads to the rejection under 35 USC 112. Accordingly, the present amendments to claim 22 now clearly define a three layer structure, with the outlying substrate and third layers comprising single crystal material and the middle layer having no single-crystal or directional structure. Kear teaches away from such a structure because he shows his two outlying layers 10a and 10b of FIG. 2 as being amorphous and his middle layer 12b being "crystalline".

Thus, reconsideration and withdrawal of the rejections of claims 22-24 under 35 USC 102 are respectfully requested.

Rejection of claims 11-21, 25 and 26 under 35 USC 103:

Reconsideration of the rejections under 35 USC 103, which are all based upon a combination of the teachings of Kurz and Kear, is respectfully requested because 1) the combination of these references destroys the functionality of the Kear invention and is thus improper, and 2) the combination fails to describe the claimed invention.

1) MPEP 2145.X.D.2 states that "It is improper to combine references where the references teach away from their combination." MPEP 2143.01(VI) states that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.

The entire teaching of Kurz concerns depositing a layer of material 43 on a substrate 41 in such a way that the layer assumes the crystal structure of the underlying substrate. This is just the opposite of the teaching of Kear, where the amorphous layer 10 or 10a and 10b is purposefully deposited to be different than the crystalline layer 12 because Kear desires a benefit derived from the amorphous nature of the layer 10 or 10a and 10b. Thus, the teaching of Kurz would destroy the functionality of the Kear invention, and their combination is inappropriate.

2) Even if one were to combine the teachings of Kurz and Kear, the resulting combination fails to include the limitations of the independent claims 11 or 25.

Independent claim 11 requires the step of applying an intermediate layer having no single-crystal or directional structure onto a single-crystal substrate. If one were to use the method of Kurz to apply an intermediate layer of material to the claimed single crystal substrate, the result would be a single crystal intermediate layer, which teaches away from claim 11.

Further, claim 11 has been amended to include the limitation of claim 17 of "wherein the intermediate layer is applied with a non-directional microstructure." Kurz describes a deposition coating process where the deposited material assumes the monocrystal microstructure of the underlying material, and Kear illustrates a columnar grained intermediate layer in his FIG. 2, thus the combination of these references fails to disclose this newly added limitation.

Further, claim 11 has been amended to include the limitation that the substrate comprises at least one undesirable crystal orientation, and the single crystal buildup layer is isolated from the at least one undesirable crystal orientation of the substrate by the intermediate layer. Kurz

teaches away from this limitation because his applied material assumes the crystal orientation of the underlying material. Kear teaches away from this limitation at column 9, line 65 through column 10, line 8 where he teaches that his interlayer changes its crystal orientation when used between two single crystal work pieces when they are joined to form a structure having a single crystal structure extending across the joint region. The present invention allows for the addition of single crystal material in spite of flaws that may exist in the substrate without having those flaws extend themselves into the newly applied single crystal material.

Independent claim 25 requires that an intermediate layer having no single crystal or directionally grown structure is applied over a single crystal substrate. In contrast, if one were to use the method of Kurz to apply the claimed intermediate layer, it would necessarily have a single crystal structure, which teaches away from claim 25.

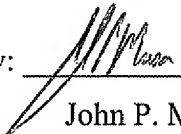
Thus, reconsideration and withdrawal of the rejections of claims 11-16, 18-21 and 25, and 26 under 35 USC 103 are respectfully requested.

Conclusion

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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